

IN THE CLAIMS

1. (Cancelled)

2. (Currently Amended) The method of Claim 4 [[1]], further comprising ~~the steps of:~~
receiving the same position request from the wireless device at a third receiver/correlator
and recording a receive time; and

using the receive time recorded at the first receiver/correlator, the receive time recorded at
the second receiver/correlator, the receive time recorded at the third receiver/correlator, and the
fixed locations of each receiver/correlator to determine the position of the wireless device

3. (Cancelled)

4. (Currently Amended) A method of determining the position of a wireless device using a
wireless network having a plurality of receiver/correlators, each receiver/correlator being positioned
at a fixed location in the network, the method comprising: ~~The method of Claim 3 wherein the step~~
~~of synchronizing all of the receiver/correlators is comprised of:~~

receiving a position request from the wireless device at a first receiver/correlator and
recording the received time;

receiving the same position request from the wireless device at a second receiver/correlator
and recording a receive time;

synchronizing all the receiver/correlators in the plurality of receiver/correlators such that an
internal clock in each receiver/correlator is synchronized and syntonized to indicate the same time
information, and wherein said synchronizing comprises:

transmitting a first synchronization packet from the first
receiver/correlator to the second receiver/correlator, the first synchronization
packet having a first transmit time at which the packet was transmitted from the
first receiver/correlator;

receiving the first synchronization packet at the second receiver/correlator
and recording the receive time;

comparing the first transmit time of the first synchronization packet with the receive time recorded at the second receiver/correlator;

synchronizing an internal clock in the second receiver/correlator using a difference between the first transmit time and the receive time, the known locations of the first and second receiver/correlators and a known propagation delay between the first and second receiver/correlators;

using the receive time recorded at the first receiver/correlator, the receive time recorded at the second receiver/correlator, and the fixed locations of each receiver/correlator to determine the position of the wireless device; and

transmitting a position information packet back to the wireless device indicating the global position of the wireless device.

5. (Currently Amended) The method of Claim 4 [[0]], wherein said the step of receiving a position request packet from the wireless cellular device at a first receiver/correlator and recording the receive time further comprises is comprised of:

detecting the reception of each bit in a header of the position request packet and using cross-correlation techniques to determine whether the bits match a known bit pattern;

recording a time each bit is detected; and

averaging the recorded times for each bit thereby accurately generating a general receive time which indicates the time at which the position request packet is received.

6. (Currently Amended) The method of Claim 5, wherein said the step of detecting the reception of each bit in a header of the position request packet further comprises is comprised of:

sampling incoming packets at a rate equal to an inverse of a rising or falling edge time and detecting any rising or falling edges;

determining whether the bit is high or low based upon the detection of a rising or falling edge; and

comparing the bit detected to a bit in the same bit position in the known bit pattern.

7. (Currently Amended) The method of Claim 4 [[1]], wherein said the step of transmitting a position information packet back to the wireless device indicating the global position of the wireless device further comprises is comprised of:

a) creating a position information packet having:

a header portion which identifies the packet as a position information packet;

a field for identifying the central server from which it is being transmitted;

an information field identifying the wireless device for which it is intended; and

b) transmitting the position information packet to the wireless device via the packet based network.

8. (Cancelled)

9. (Currently Amended) A system for identifying the position of a wireless device and transmitting that position back to the wireless device, the system comprising: The system of Claim 8, wherein the central server:

a plurality of receiver/correlators, each of said plurality of receiver/correlators being positioned at a fixed location in the network, and wherein each of said plurality of receiver/correlators is further for;

a) generating a trigger signal each time a position request packet is received from said wireless device, said trigger signal used to record a local time, as indicated by an internal clock, at which the position request packet is received; and

b) generating at least one timing packet comprising information about said position request packet, and further comprising said local time; and

a central server for performing a routine for determining the position of the wireless device, said routing comprising:

determining a first position curve along which the wireless device may be located based upon a first timing difference between the timing information extracted from a first timing packet received from a first receiver/correlator and the timing information extracted from a second timing packet received from a second receiver/correlator, the known locations of the first and second receiver/correlators, and the known speed of the timing packets;

determining a second position curve along which the wireless device may be located based upon a second timing difference between the timing information extracted from said first timing packet received from said first receiver/correlator and the timing information extracted from a third timing packet received from a third receiver/correlator, the known locations of the first and third receiver/correlators, and the known speed of the timing packets, and wherein said second position curve will intercept the first position curve at two locations, either of which may be the location of the wireless device; and

determining a third position curve along which the wireless device may be located based upon a third timing difference between the timing information extracted from said second timing packet received from said second receiver/correlator and the timing information extracted from said third timing packet received from said second receiver/correlator, the known locations of the second and third receiver/correlators, and the known speed of the timing packets, and wherein the third position curve will intercept the first and second position curves at one location, which will determine the location of the wireless device

~~extracts timing information from a first timing packet received from a first receiver/correlator and timing information from a second timing packet received from a second receiver/correlator and determines a difference between the two timing informations;~~

~~based upon this difference in time, the known locations of the first and second receiver/correlators, and the known speed of the timing packets, the central server use known hyperbolic equations in order to determine a first position curve along which the wireless device may be located;~~

~~extracts timing information from the first timing packet received from the first receiver/correlator and timing information from a third timing packet received from a third receiver/correlator and once again determines a difference between the two timing informations;~~

~~based upon this difference, the known locations of the first and third receiver/correlators, and the known speed of the packets, the central server uses known hyperbolic equations to determine a second position curve along which the wireless device may be located, wherein this second position curve will intercept the first position curve at two locations, either of which may be the location of the wireless device;~~

~~extracts timing information from the second timing packet received from the second receiver/correlator and timing information from the third timing packet received from the third receiver/correlator and once again determines a difference between the two timing informations; and~~

~~based upon this difference, the known locations of the first and third receiver/correlators, and the known speed of the packets, the central server uses known hyperbolic equations to determine a third position curve along which the wireless device may be located, wherein the third position curve will intercept the first and second position curves at one location, which will determine the location of the wireless device.~~

10. (Original) A plurality of receiver/correlators coupled in a wireless packet based network and each having a fixed location, the receiver/correlators being used for determining the geographic position of a wireless cellular device, each receiver/correlator comprising:

an internal clock; and

a synchronization packet detector for:

detecting synchronization packets which are used to synchronizing and syntonizing the internal clock; and

detecting position request packets from the wireless cellular device and generating a trigger signal each time a position request packet is received, the trigger signal used to record a local time on the internal clock at which the position request packet is received.

11. (Currently Amended) The plurality of receiver/correlators of Claim 10, wherein each receiver/correlator further includes:

a timing packet generator for generating a timing packet which identifies a particular position request packet and the time it was received at the receiver/correlator, the timing packet being transmitted to a central server for processing.

12. (Cancelled)

13. A packet based communications protocol for receiving a position request from a wireless device and transmitting position information back to the wireless device, the packet based communications protocol comprising: The packet based communications protocol of Claim 12, further comprising:

- a timing packet which is transmitted from the receiver/correlator to the central server, having a header which identifies the packet as a timing packet, a field for identifying the receiver/correlator from which it was transmitted, a field identifying timing information which includes a Δt time at which the position request packet was received at the receiver/correlator, and a field identifying the corresponding position request packet;

a position request packet which is transmitted from the wireless device to a receiver/correlator which includes a header having a known bit pattern which identifies the packet as a position request packet, and a field for identifying the wireless device from which it was transmitted; and

a position information packet which is transmitted from a central server to the wireless device which includes a header which identifies the packet as a position information packet, a field for identifying the central sever from which it was transmitted, an information field identifying the wireless device for which it is intended, and a field identifying the position of the wireless device, as determined by the central server.